

## Claims

- [c1] What is claimed is:
1. A method of testing the low contrast performance of an imaging system comprising the steps of:
    - (A) positioning a first phantom and a second phantom in a scanning bay;
    - (B) acquiring imaging data of the phantoms;
    - (C) reconstructing a set of images for each of the phantoms from the imaging data, each image having a number of pixels;
    - (D) interchanging at least one pixel from an image of the first phantom with at least one pixel from an image of the second phantom; and
    - (E) prompting a user to identify the at least one pixel interchanged into the image of the first phantom.
  - [c2] 2. The method of claim 1 further comprising the step of indicating to the user if the at least one pixel interchanged into the image of the first phantom was properly identified.
  - [c3] 3. The method of claim 1 wherein the step of interchanging includes the step of randomly replacing at least one pixel from the image of the first phantom with at least one pixel from the image of the second phantom.
  - [c4] 4. The method of claim 3 wherein the step of randomly replacing includes the step of removing at least one pixel from one quadrant of the image of the first phantom and incorporating at least one pixel of the image of the second phantom therein.
  - [c5] 5. The method of claim 1 further comprising the step of repeating steps (D)–(E) for each image of the set of images.
  - [c6] 6. The method of claim 5 further comprising the step of determining a total accuracy score corresponding to an accuracy in identifying the at least one pixel interchanged into the image of the first phantom for each of the set of images.
  - [c7] 7. The method of claim 1 wherein the first phantom includes a spherical uniform phantom having a generally uniform noise intensity and wherein the second phantom includes a phantom with low contrast detectability (LCD)

objects.

- [c8] 8. The method of claim 7 wherein the at least one pixel of the image of the second phantom interchanged into the image of the first phantom includes a group of pixels corresponding to an object with LCD.
- [c9] 9. A computer readable storage medium having a computer program stored thereon for assisting a user in identifying a low contrast object in an image and having a set of instructions that when executed by a computer causes the computer to:
- access an image of a uniform phantom;
  - access an image of an LCD phantom;
  - randomly remove a set of pixels of the image of the uniform phantom and replace with a set of pixels of the image of the LCD phantom;
  - reconstruct a test image therefrom; and
  - display the test image and prompt the user to identify the set of pixels from the image of the LCD phantom within the test image.
- [c10] 10. The computer readable storage medium of claim 9 wherein the set of instructions further causes the computer to:
- determine an accuracy of a user response identifying the set of pixels from the image of the LCD phantom within the test image; and
  - convey the accuracy to the user.
- [c11] 11. The computer readable storage medium of claim 9 wherein the set of instructions further causes the computer to randomly remove the set of pixels from a quadrant of the image of the uniform phantom and incorporate the set of pixels of the image of the LCD phantom in the quadrant.
- [c12] 12. The computer readable storage medium of claim 11 wherein the set of instructions further causes the computer to prompt the user to identify the quadrant of the test image having the set of pixels of the image of the LCD phantom.
- [c13] 13. The computer readable storage medium of claim 9 wherein the set of instructions to access an image of a uniform phantom further includes

instructions to cause the computer to select one image from a set of images of the uniform phantom stored on a database.

[c14] 14. The computer readable storage medium of claim 13 wherein the set of instructions further causes the computer to reconstruct the set of images of the uniform phantom from imaging data acquired of the uniform phantom and store the set of images of the uniform phantom on the database.

[c15] 15. The computer readable storage medium of claim 9 wherein the set of instructions to access an image of an LCD phantom further includes instructions to cause the computer to select one image from a set of images of the LCD phantom stored on a database.

[c16] 16. The computer readable storage medium of claim 15 wherein the set of instructions further causes the computer to reconstruct the set of images of the LCD phantom from imaging data acquired of the LCD phantom and store the set of images of the LCD phantom on the database.

[c17] 17. The computer readable storage medium of claim 9 wherein the set of instructions further causes the computer to randomly remove the set of pixels of the image of the uniform phantom from a region of the image of the uniform phantom having uniform noise intensity.

[c18] 18. A diagnostic imaging system comprising:  
an imaging bay;  
a table configured to position a subject to be imaged in the imaging bay;  
a DAS configured to acquire imaging data of the subject; and  
a computer programmed to:  
(A) acquire imaging data of uniform phantom and an LCD phantom;  
(B) reconstruct an image of the uniform phantom from the imaging data, the uniform phantom having a generally uniform noise intensity;  
(C) reconstruct an image of the LCD phantom from the imaging data;  
(D) incorporate a portion of the image of the LCD phantom into the image of the uniform phantom and form a test image therefrom;  
(E) display the test image to a user and prompt the user to identify the portion

of the test image corresponding to the LCD phantom; and  
(F) receive a user response and determine an accuracy score thereof.

[c19] 19. The diagnostic imaging system of claim 18 wherein the computer is further programmed to convey the accuracy score to the user.

[c20] 20. The diagnostic imaging system of claim 18 wherein the portion of the image of the LCD phantom includes a set of pixels corresponding to an LCD object.

[c21] 21. The diagnostic imaging system of claim 18 wherein the computer is further programmed to reconstruct additional images of the uniform phantom and the LCD phantom and repeat acts (D)–(F) for each additional image of the uniform phantom and the LCD phantom.

[c22] 22. The diagnostic imaging system of claim 21 wherein the computer is further programmed to determine and convey a total accuracy score for all user responses.

[c23] 23. The diagnostic imaging system of claim 18 incorporated into at least one of an ultrasound system, an x-ray system, a CT system, and an MR system.